



# UNITED STATES PATENT AND TRADEMARK OFFICE

TH  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,236	10/18/2005	Jimmy Hwee Seng Chew	1007.P056US/GDL/ay	5176
7590 04/20/2007 Advanced Systems Automation LTD BLK 25 Kallang AVE 07-06 Singapore Singapore, 339416 SINGAPORE			EXAMINER HOLLINGTON, JERMELE M	
			ART UNIT 2829	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/533,236

Applicant(s)

CHEW ET AL.

Examiner

Jermele M. Hollington

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: in line 9, insert –This application is a 371 of PCT/SG03/00204 filed on August 29, 2003--.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 7-12, 15-19, 24-26, 28 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Kazuma et al (EP 1028455A2).

Regarding claim 1, Kazuma et al disclose [see Fig. 1] A handler (system 10) [see Note below] for singulating at least one packaged substrate (CSP substrate 25) into a plurality of packaged semiconductor devices by using a water jet, the handler comprising: a first movable mount (transfer means 14) for moving between a loading location (transfer unit 12) and a cutting location (cutting unit 11), the first movable mount (14) adapted to [see Note 2] receive the at least one packaged substrate (25) at the loading location (12), the first movable mount (14) for transporting the at least one packaged substrate (25) from the loading location (12) to the cutting location (11), and the first movable mount (14) adapted to secure the at least one packaged substrate (25) [via storage area 15] thereon while the at least one packaged substrate (25) is at least partially cut at the cutting location (11); and a second movable mount (transfer means 24)

Art Unit: 2829

for moving between the cutting location (11) and an unloading location (boarding area 23), the second movable mount (24) adapted to [see **Note 2**] receive the at least one packaged substrate (25) that is at least partially cut at the cutting location (11), the second movable mount (24) for securing the at least one packaged substrate (25) thereon while the at least one packaged substrate (25) is at least partially cut at the cutting location (11) to produce at least some of the plurality of packaged semiconductor devices (25), and the second movable mount (24) for transporting the at least some of the plurality of packaged semiconductor devices (25) from the cutting location (11) to the unloading location (23).

[**Note:** The recitation “*for singulating at least one packaged substrate into a plurality of packaged semiconductor devices by using a water jet*” has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).]

[**Note 2:** Claim limitations that employ phrases of the type “adapted to” are typical of claim limitations, which may not distinguish over the prior art. It has been held that the recitation that an element is “adapted to” perform a function is not a positive limitation but only requires the ability to so perform. See also MPEP 2111.04]

Regarding claim 7, Kazuma et al disclose at least one transport guide (rail 31) that extends from the cutting location (11), and through to the unloading section (23), wherein at least the first movable mount (14) is movably coupled to the at least one transport guide (31).

Regarding claim 8, Kazuma et al disclose at least one transport guide (31) comprises at least a pair of rails, and wherein at least the first movable mount (14) is movably coupled to the pair of rails.

Art Unit: 2829

Regarding claim 9, Kazuma et al disclose at least the second movable mount (24) is movably coupled to the pair of rails.

Regarding claim 10, Kazuma et al disclose the pair of rails (31) are substantially linear and extend substantially parallel to each other from the loading location (12), through the cutting location (11), and to the unloading location (23).

Regarding claim 11, Kazuma et al disclose the first movable mount (14) comprises a rotatable vacuum chuck (cassette 13a) for securing the at least one packaged substrate (25) thereto.

Regarding claim 12, Kazuma et al disclose the second movable mount (24) comprises a rotatable vacuum chuck (carrier 32) for securing the at least one packaged substrate (25) thereto.

Regarding claim 15, Kazuma et al disclose a transfer means (transfer means 40) for transferring the at least one packaged substrate (25) from the first moveable mount (14) to the second movable mount (24).

Regarding claim 16, Kazuma et al disclose the transfer means (40) comprises at least one pick and place assembly (pick up and transfer means 42 and 43) mounted to operate at the cutting location (11).

Regarding claim 17, Kazuma et al disclose a method [see **Note** below] for handling at least one packaged substrate (CSP package 25) for singulation into a plurality of packaged semiconductor devices by using a water jet, the method comprising: a) providing: a first movable mount (transfer means 14) for moving between a loading location (transfer unit 12) and a cutting location (cutting unit 11); and a second movable mount (transfer means 24) for moving between the cutting location (11) and an unloading location (boarding area 23), b)

Art Unit: 2829

moving the first movable mount (14) from the loading location (12) to the cutting location (11) with the at least one packaged substrate (25) disposed thereon; c) cutting [via cutting means 19] the at least one packaged substrate (25) in a first reference direction (Y-axial direction) at the cutting location (11) [see col. 5, line 50 – column 6, line 9]; d) transferring the at least one packaged substrate (25) from the first movable mount (14) to the second movable mount (24); e) cutting [via cutting means 19] the at least one packaged substrate (25) in a second reference direction (X-axial direction) [see col. 5, line 50 – column 6, line 9] different from the first reference direction, at the cutting location (11), to produce the plurality of packaged semiconductor devices (25); and f) moving the second movable mount (24) from the cutting location (11) to the unloading location (boarding section 23).

[Note: The recitation “for singulating at least one packaged substrate into a plurality of packaged semiconductor devices by using a water jet” has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).]

Regarding claim 18, Kazuma et al disclose prior to (b), loading the at least one packaged substrate (25) on the first movable mount (14).

Regarding claim 19, Kazuma et al disclose after (f), unloading the plurality of packaged semiconductor devices (25) on the second movable mount (24).

Regarding claim 24, Kazuma et al disclose (b) further comprises moving the second movable mount (24) from the cutting location (11) to the unloading location (23) with at least another previously singulated packaged substrate (25) disposed thereon.

Art Unit: 2829

Regarding claim 25, Kazuma et al disclose (e) further comprises unloading the at least another previously singulated packaged substrate (25) at the unloading location (23).

Regarding claim 26, Kazuma et al disclose (c) further comprises moving the first movable mount (14) in the first reference direction (X-axial direction).

Regarding claim 28, Kazuma et al disclose wherein (e) further comprises moving the second movable mount (24) in the first reference direction (X-axial direction).

Regarding claim 30, Kazuma et al disclose wherein (d) comprises picking the at least one packaged substrate (25) off the first movable mount (14) [via transfer means 40], moving the first movable mount (14) from the cutting location (11) to the loading location (12), moving the second movable mount (24) from the unloading location (23) to the cutting location (11), and placing the at least one packaged substrate (25) on the second movable mount (24).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

Art Unit: 2829

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 2-6, 20-23, 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuma et al (EP 1028455A2) in view of Cole et al (WO 02/35585A1).

Regarding claims 2-6, 20-23, 27 and 29, Kazuma et al disclose [see Fig. 1] A handler (system 10) comprising: a first movable mount (transfer means 14) for moving between a loading location (transfer unit 12) and a cutting location (cutting unit 11), the first movable mount (14) adapted to secure the at least one packaged substrate (25) [via storage area 15] thereon while the at least one packaged substrate (25) is at least partially cut at the cutting location (11); and a second movable mount (transfer means 24) for moving between the cutting location (11) and an unloading location (boarding area 23). However, they do not disclose that a water jet does the cutting of the substrate. Cole et al disclose [see Figs. 3-6] an apparatus includes a fixture to align and hold a wafer (614) wherein a cutting head assembly (600) comprising a cylinder (602) to supply water at high pressure, abrasive inlet(s) (606) to supply abrasive powder, mixing tube (610) to mix the water and abrasive and fluid jet cutting nozzle (612) to cut through the wafer (614). Further, Cole et al teach that the addition of cutting head assembly is advantageous because it provides a low cost apparatus to cut dice from a wafer in order to increase the yield of dice from each wafer and reduce the unit cost of fabricating the dice. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Kazuma et al by adding water jet cutting tool as taught by Cole et al in order to increase the yield of dice from each wafer and reduce the unit cost of fabricating the dice.



Art Unit: 2829

7. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuma et al (EP 1028455A2) in view of Itasaka et al (20010043076A1).

Regarding claims 13-14, Kazuma et al disclose [see Fig. 1] A handler (system 10) comprising: a first movable mount (transfer means 14) for moving between a loading location (transfer unit 12) and a cutting location (cutting unit 11), the first movable mount (14) adapted to secure the at least one packaged substrate (25) [via storage area 15] thereon while the at least one packaged substrate (25) is at least partially cut at the cutting location (11); and a second movable mount (transfer means 24) for moving between the cutting location (11) and an unloading location (boarding area 23). However, they do not disclose that image capture device as claimed. Itasaka et al disclose [see Figs. 20-21] image capture devices (CCD cameras 57, 58A, 58B and 60) for capturing at least one image of the at least one package substrate (semiconductor 10). Further, Itasaka et al teach that the addition of CCD cameras is advantageous because it is constructed to individually image each semiconductor package for the purpose storing position recognition data to determine whether or not the package substrate is a good device or bad device. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Kazuma et al by adding image capture device such as a CCD camera as taught by Itasaka et al in order to stored position recognition data to determine whether or not the package substrate is a good device or bad device.

### ***Conclusion***

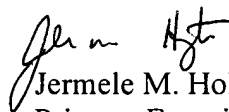
8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 for details.

Art Unit: 2829

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermele M. Hollington whose telephone number is (571) 272-1960. The examiner can normally be reached on M-F (9:00-4:00 EST) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on (571) 272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Jermele M. Hollington  
Primary Examiner  
Art Unit 2829

JMH  
April 17, 2007